CUBIT Capability Proposal

Technical Area Geometry, Meshing, Infrastructure, GUI, Graphics, etc..	**Technical Lead** Cubit Developer in charge of technical area
Infrastructure	Darryl Melander

MRD Description
Describe the capability in terms of how a user would see it.

Increased memory efficiency for large meshes.

SRS Description
What needs to be done by Cubit developers to implement this capability? Break the tasks into steps if applicable. (Steps should be on the order of 2 man-weeks or more)

1. Replace CUBIT's SMD implementation with current version of MOAB.
2. Convert CUBIT's implementation of BC's and output of various mesh formats to use MOAB export capabilities, or port those export capabilities to MOAB.
3. Implement capability to import MOAB meshes into CUBIT and associate with existing CUBIT geometry.

Justification
Describe why this is important and what impact it will have if it is implemented. (or not implemented).

MOAB's implementation of mesh export, BC's, and mesh import is more modular, has less code duplication, translating to simplified maintenance of this code. MOAB also simplifies implementation of new mesh export formats and representation of new types of BC's because of its data model design. Finally, MOAB is more memory-efficient in its mesh representation, and can represent connectivity implicitly for structured and, soon, semi-structured (swept) mesh. Integrating MOAB into CUBIT will simplify general code maintenance and bring us closer to generating very-large meshes.

Resources Who will work on this	**Time estimate** How much time will it take in man-weeks	**Targeted Release** 10.2 (August 06), 10.3 (March 2007), 10.4 (August 2007), Future (beyond FY07)
Tim Tautges, Darryl Melander	26?	10.3

Submitted By:	**Date:**
Tim Tautges	4/4/06